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MEDICAL DES MOINES, IOWA

ORIGINAL ARTICLES

ACIDOSIS IN INFANCY AND CHILDHOOD.*

JAMES D. LOVE, M. D.,
Jacksonville, Fla.

Not a few writers refer to acidosis and acid intoxication in a manner as to warrant the inference that it is a distinct disease with definite etiology, symptomatology and treatment. On the other hand, there are those who hold acidosis to be but a part of some basic condition which gives itself expression through a definite collection of symptoms and signs.

An element of danger exists in regarding acidosis as a disease *per se*, in that in attaching to it too much significance, we may be led to overlook certain conditions which are directly responsible. On the other hand, the group of symptoms constituting acidosis often proves so dangerous as to warrant our attaching more importance to its treatment than to the actual causal condition or disease.

A definition of acidosis is incomplete without a mention of the various phenomena which at one time or another may enter into its constitution. The condition is usually, though not always, accompanied by the presence in the urine of acetone, diacetic and beta-oxybutyric acids, an increase in the ammonia salts of the urine, a reduction of the carbon dioxid tension of the alveolar air, an increase in the hydrogen ion concentrate of the blood, and a reduction in the amount of urine passed. In addition there are certain subjective and objective signs which when present constitute a definite picture of acidosis or acid intoxication. Those most conspicuous and consistently present are marked prostration, air hunger or hyperpnea, the respirations being both rapid and deep, either stupor or restlessness, nausea, coated tongue, cherry-red lips, marked pallor, acetone odor to the breath, unduly low temperature of the expired air, retracted abdomen, enlarged liver, marked weakness of circulation, and an irregular temperature curve. It goes without saying that all this grouping of symptoms, so unmistakably those of acidosis of marked severity, should not be expected in any given case.

In many cases the etiology of acidosis is exceedingly obscure and due to perverted function of metabolism, the nature of which is not understood. In many other cases the cause is obvious, and for the most part can be assigned to one of the infectious diseases or to some disorder of digestion and nutrition. We, therefore, refer to the "infectious type" and "digestive type" of acidosis. Mild or moderately severe cases are spoken of as "acidosis," while severe cases are referred to as "acid intoxication." Any acute infectious disease is capable of precipitating an attack of acidosis; those oftenest responsible being infectious diarrhea, intestinal intoxication, tonsilitis, bronchitis, pneumonia, otitis media, appendicitis, and any of the severely acute exanthems. It may be produced by general anæsthesia, severe burns, starvation, cachexia, diabetes, nervous disturbances due to fright, hepatic lesions of several varieties, protracted vomiting, and finally and most frequently to faulty digestion of fats and carbohydrates. This array of causal maladies should in itself lead us to doubt the existence of acidosis as a disease *per se*, and should incline us to the view that acidosis is a symptom complex standing in a direct relation to many known diseases and conditions. But lest we

*Read by title before the forty-third annual meeting of the Florida Medical Association at Arcadia, May 10-12, 1916.

minimize the importance of acidosis by regarding it as a symptom purely, I would emphasize the fact that just as pyrexia in itself constitutes an element of danger in many conditions with which it is associated, so does acidosis frequently assume a position more formidable and dangerous than the underlying disease or condition. No matter what the concomitant disease, acidosis aggravates it. It complicates and retards the course of many maladies, prolongs convalescence, lessens the power of vital resistance, and not infrequently is the prime factor in causing death itself.

While acidosis is dependent on many factors, we must not lose sight of the fact that it is essentially an expression of perverted metabolism. We hold this to be true no matter how imperfect is our knowledge of the various processes through which this disturbed function is brought about. It is equally sure that no matter what the cause, an early recognition of the condition is imperative. The earlier it is recognized and treated, the greater the success that will attend our efforts.

Without doubt the "digestive" type of acidosis is sufficiently understood to warrant some dogmatic assertions relative to etiology, symptomatology and treatment. The term "acidosis" designates not an acid condition of the circulating fluids and tissues of the body, but a relative lessening of their alkalinity due to a neutralization of alkalies or withdrawal of basic salts from the body. In conditions of health there is constantly maintained a pretty definite fixed alkali content of the blood and tissues. In considering digestive acidosis, we presuppose an excessive production of organic acid in the intestines as the prime contributing factor. Any ordinary amount of acid, whether it originates within the intestines or is formed within the body or exists through virtue of defective elimination of acids by the kidneys or other organs, is oxidized without difficulty. If, however, acid exists in excessive quantity, the available fixed alkalies of the system, potassium and sodium, are insufficient for its neutralization, and the ammonia of the body is called upon to take the place of the depleted alkalies. Then it is that ammonia salts are formed, to subsequently be excreted by the kidneys. Ammonia compounds are a fairly constant condition of the organism, owing their origin to the transformation to such of nitrogenous constituents of food. Normally these ammonia compounds undergo further conversion into urea and are excreted as such in the urine. But when ammonia is called upon to take the place of the fixed alkalies in order to neutralize unoxidized acids, then as a consequence there is shown a dimunition of urea in the urine and an increase of ammonia salts. Coincident with this there usually appear in the urine acetone and finally diacetic and beta-oxybutyric acids. The next question to consider is the origin of the acids which cause this disturbance. They may arise in the economy through faulty metabolic processes and perverted liver function, possibly, as suggested by Howland and Marriott, to deficient kidney excretion of acid phosphate and more certainly to acids created in the intestinal tract. It is generally conceded that any of the food elements may, owing to faulty digestion, over-feeding or digestive intolerance, be responsible for the excessive production of acids within the intestines. Of these food elements the fats are the chief offenders, next the carbohydrates and finally the proteids. As a result of fat intolerance there may be produced any of the group of fatty acids, and in like manner lactic acid may be the resultant of imperfect digestion of carbohydrates and even of proteids. Though it has not been conclusively proven that lactic acid is a cause of acidosis. Of the acids commonly held responsible for acidosis are diacetic, beta-oxybutyric, glycuronic, oxalic, and lactic acids, to which possibly may be added acid phosphate and various amino acids. It is unlikely that any one class of foods is at any time solely respon-

sible for acidosis; for it is generally recognized that the complete combustion of fats requires simultaneous oxidation of carbohydrates. Furthermore it is rare that imperfect digestion remains long confined to any one element of food. While lactic acid is said to be an etiologic factor in the production of acidosis, this is denied by some authorities. However, we know that acidosis is very frequently associated with enlarged liver and presumably with imperfect catabolism of glycogen; and since lactic acid is one of the products of this perverted metabolic process, it is more than probable that lactic acid can be assigned a role in the production of acidosis. If so, it may be a tenable theory that the excessive production of lactic acid by the Bulgarian bacillus, when administered medicinally, may cause or aggravate an already existing acidosis. For this reason we are cautioned against the employment of the Bulgarian bacillus in conditions associated with anæmia, cachexia, and emaciation, all of which conditions are likely to be associated with an acidosis. It must be remembered that many children are predisposed to acidosis and develop its symptoms complex on the slightest provocation. This explains why many usually simple and harmless conditions take on a serious aspect in many children out of all proportion to what might reasonably be expected. Almost daily we encounter children who are subject to frequent recurrent and periodic attacks of fever lasting from one to three days. In the vast majority of such cases the fever is caused by a fat and carbohydrate indigestion associated with some degree of acidosis. Instead of treating such children for malaria we do much better by correcting a faulty diet and administering as long as necessary some alkaline medication. The results thus secured are often as striking as they are gratifying. Cyclic and recurrent vomiting are conditions usually associated with acidosis, but there is a diversity of opinion as to whether the existing acidosis is a cause or effect of the vomiting.

The modern surgeon is awake to the possibilities of surgical acidosis and recognizes it as a frequent cause of profound shock. In the light of its relationship to anæsthesia and prolonged surgical operations, a routine examination of the urine for acetone is as imperative as an examination for albumin. And in all operations of election the presence of acidosis either indicates a postponement of operation or a radical treatment of the condition both before and after such operation.

Assuredly the existence of acidosis is a contraindication to prolonged starvation following operative procedure. As to the significance of acid intoxication, it has been my observation that it usually portends a fatal termination in young infants, no matter what the underlying cause might be. It is an exceedingly dangerous complication in all children when it exists to such an extent as to cause a marked acetone odor to the breath and stools. When it is accompanied by marked enlargement of the liver and where the exhaled air is of a lower temperature than is seemingly warranted by the patient's general condition, the prognosis is as grave as possible. I have seen patients in a moribund condition due to marked acid intoxication, and yet the cherry-red lips would impart to the face such an appearance of good circulatory conditions as to materially mislead one in the immediate prognosis. No case of acidosis in childhood can be safely disregarded, for the reason that while it may be but a transitory condition, it may on the other hand be the precursor of a serious acid intoxication. No matter what may be the underlying cause of the acidosis, even though it be undiscoverable, it is imperative that this symptom complex be vigorously and promptly treated. In view of what is generally conceded to be causes of acidosis, it occurs to me as a rational procedure that we should employ prophylactic measures against the occurrence of

this condition in all cases of illness known to be commonly associated with acidosis. In acute infectious diseases of all kinds, and especially in diarrheal disturbances, we should not wait for the development of acidosis but should anticipate it by the administration of sufficient sodium bicarbonate to render the urine alkaline. If administered before the development of acidosis much less of the bicarbonate is necessary to alkalinize the urine than is the case when acidosis is well established. This is explained by the fact that children suffering with an acid intoxication show a marked tolerance to alkaline therapy. When given as a prophylactic measure, about forty to fifty grains of bicarbonate of soda daily is sufficient to keep the urine decidedly alkaline. If, however, an acidosis becomes established, about four or five times this amount is needed. Potassium citrate in nearly the same doses will accomplish the same purpose, if tolerated by the stomach. Thirty grains of soda in two ounces of water may be administered by rectum every two hours or administered by the drop method, if no diarrhea exists. In severe cases it is more desirable to employ the intravenous method of administration of soda. Three to five ounces of a four per cent solution repeated in three hours, if necessary, will give quicker results than any other method. On account of its irritating quality, bicarbonate of soda can not well be administered subcutaneously or intramuscularly. Since the glycogenic function of the liver is usually impaired in acid intoxication, the administration of dextrose by hypodermoclysis rests on a rational and practical basis. Four ounces of a two-and-a-half per cent solution of dextrose in normal salt solution may be given three to four times a day. If constipation exists, magnesia is the preferable laxative. Fats should be excluded from the dietary and likewise the readily fermentable carbohydrates. Well cooked cereal gruels with weak broths should be relied upon till the patient's condition warrants a more liberal dietary. An abundance of water should be administered both in the hope of diluting excessive acid and stimulating kidney secretion.

In conclusion it may be admitted that acidosis is a condition still veiled in obscurity, that much concerning etiology still remains to be proven, that many of the suggestions contained in this article are subject to radical revision and alteration as our knowledge of acidosis becomes more complete.

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ACIDOSIS.*

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As this is not the only paper on this subject presented this afternoon I will confine myself largely to some personal observations and case reports, omitting entirely the consideration of etiology and chemistry. I do not intend at this time to consider the acidosis of diabetes, that following surgical operations, pernicious vomiting of pregnancy or that found in heart lesions. I wish, however, to refer to the so-called "acidosis" in acute infections but mainly to that form which seems to me to be a primary disease.

At a medical meeting last December a colleague remarked that many of the cases of "grippe" which was then becoming epidemic had severe vomiting. I collected as many specimens of urine as possible from

*Read before the forty-third annual meeting of the Florida Medical Association at Arcadia, May 10-12, 1916.

these cases and found that many showed considerable acetone and some also had diacetic acid. This appeared to explain the vomiting, particularly as the alkaline treatment relieved it. As time went on and the cases became more numerous, I examined urines in cases of "grippe" which had no vomiting and often found acetone and diacetic acid occasionally. These cases were by no means confined to children but all ages were affected. In my own family, for instance, there were two cases, one in a baby and the other in an adult. Both cases had fever as the main symptom, neither showed any particular symptoms of acid intoxication but both had acetone and diacetic acid in the urine. It was therefore soon apparent that the epidemic was one of "grippe," sometimes with evidence of a mild acidosis secondary to a bacterial infection. I am led to speak of this subject somewhat at length because of certain newspaper reports of an epidemic of acidosis in the North. Morse,[1] in a careful presentation of the subject, is of the opinion that in the vast majority of cases reported as acidosis, in Boston, there was no justification for this diagnosis. Also that in the routine examination of urines in the Boston Children's Hospital, acetone and diacetic acid were found so often that no attention was paid to them unless there were symptoms of acid intoxication. On the other hand Metcalf[2] described a series of 100 cases in Concord, N. H., in which there were definite symptoms of acid intoxication. Whatever the disease may have been in the North, my observations in Florida are that it is a misnomer to speak of an epidemic of acidosis as the acetone bodies are of common occurrence in acute infections. In such cases the acidosis, if present, is not the disease but a symptom and secondary to a primary infection. For instance there recently occurred two cases in children, one in my own practice and one seen with Dr. Wilcox, in which, at first, practically the only symptom was a high fever. The urines of both children contained a moderate amount of acetone but no diacetic acid. As there seemed to be little else to go on both were given the alkaline treatment in spite of the absence of any symptoms of acid intoxication. No benefit was apparent in either case and one proved to be a pneumonia and the other typhoid fever. I do not wish to minimize the importance of examining the urine in all such cases, particularly when there is vomiting, and instituting the alkaline treatment whenever there is the least indication, for within reasonable limits it can do no harm and may do much good.

I now wish to present briefly a few cases of what I consider to be true cases of acid intoxication, apparently secondary to no other disease.

Case 1. W. C., aged 6, became ill on June 20th, with vomiting supposed but not known to have followed the eating of green peaches. As the child insisted that she ate none and as no peach skins were ever discovered in the stools, it is probable that this had nothing to do with it. Castor oil was administered without result and calomel, salts and repeated high enemas likewise failed to produce a bowel movement. The father, who was a retired physician, became alarmed at her condition as the days went by, with the child getting gradually worse. An intestinal obstruction was feared and an operation had been considered. I first saw the child on June 25th, five days after the onset. The vomiting had by that time ceased but there had still been no bowel movement. The parents stated that there had been a slight fever and in the beginning some distention which had been relieved by the enemas.

Physical examination showed practically a normal pulse and temperature but there was a little dyspnœa. There also was a pallid ring around the mouth. There was a very dull expression and the child was markedly

[1]Morse, John Lovett. Boston Medical and Surgical Journal, April 20, 1916.
[2]Metcalf, C. R. Amer. Jour. Dis. Children, January, 1915.

listless and drowsy. The thorax was normal and the abdomen slightly distended but otherwise negative. However, the general appearance was so bad that the mother had practically given up hope of the child's life. There was a very distinct acetone odor to the breath which, of course, gave the clue to the diagnosis. Examination of the urine showed a very marked test for both acetone and diacetic acid.

Five minims of pituitrin was given and sodium bicarbonate by the mouth and by the Murphy dip method in the rectum. This was at about noon and when I saw the child that evening she was sleeping naturally, had broken out in a perspiration and the rectal tube had been abandoned on account of the frequent fecal discharges. Next morning the child had a large stool and when I arrived she was sitting up in bed and nearly as bright as usual. The acetone and diacetic continued to be excreted in the urine for some days, but eventually disappeared. I have since regretted that I gave the pituitrin, but I am confident that it was the soda which caused the striking change in the child's condition.

Some months later the little girl became ill again with gastro-enteric symptoms, but the parents in the light of their previous experience gave soda immediately and the attack amounted to but little. The urine, however, again showed a marked test for acetone and diacetic acid which disappeared after a few days. Since then the child has been well. This case resembles the type described by Abt[3] of Chicago, and I believe is clearly one of acid intoxication.

The two following cases are examples of a less severe type:

Case 2. W. C., aged 6, was seen on February 9th in my office. The complaint was of vomiting and marked distaste for food which began the day before. He stated that he had been hit in the stomach while at play two days before and the mother feared that there had been some internal injury on account of the vomiting. Pulse and temperature were normal but there was a distinct dull expression and a slight odor of acetone on the breath. He was immediately put on milk of magnesia but he vomited the medicine several times that night. The following day he was put on bicarbonate of soda and I had no occasion to see him again.

This case showed acetone in the urine but no diacetic acid until later. The fact that acetone was found 24 hours after the onset of symptoms excludes the possibility that the acetonuria was due to starvation and marks it as a beginning acidosis.

Case 3. While calling on another patient, Mrs. W., spoke to me about her three-year-old baby who, for some unknown reason, had been vomiting since the day before. The mother also stated that the child had been unnaturally dull and drowsy. No other symptoms were discovered except a slight but distinct acetone odor on the breath. The urine was obtained immediately and showed large amount of acetone and diacetic acid. A prescription for sodium bicarbonate was given and I have never seen the child again. I later telephoned the mother and she stated that after a very few doses the whole condition cleared up and the child had been perfectly well since.

These last two cases are examples of a mild intoxication and apparently secondary to no other disorder. I think that such are easily overlooked and that it is always important to keep this condition in mind. Acute acidosis is almost always described as a disease peculiar to infancy and childhood. I consider, however, that while the disease undoubtedly occurs much more frequently in early years, that it may occur in adults as well. The following appears to be a case of mild acidosis:

Case 4. Mrs. S., was seen in her room at a hotel on February 24th, at ten p. m., she was bright and cheerful and felt that a doctor was rather unnecessary. Her only

[3]Abt, T. A. Journal A. M. A., November 15, 1913. Discussion, page 1767.

complaint was of pain in the left hypochondrium. Pulse and temperature were normal. There was slight distention of the abdomen and a little tenderness over the site of the pain. Physical examination was otherwise negative. It seemed to be simply a case of constipation with gas pains, and castor oil was advised and the case dismissed. The following evening I was again called. The pulse and temperature were again normal; she had a good result from the oil, the distention had disappeared but she still had the pain. The change in the woman's appearance was, however, very striking. The bright expression of the previous evening had given place to a stupid, dull appearance and she appeared as if she were under the influence of a narcotic. There was a slight acetone breath and the urine contained acetone but no diacetic acid. Sodium bicarbonate was given all night but owing to a druggist's mistake too little was given. In spite of the small dosage the following morning she was brighter. She had a headache but no pain in the abdomen. Soda was started in drachm doses every hour and by late afternoon she was up and around and although a little weak, was as bright as usual.

The last case I hesitate to report at all for it did not occur in my own practice, and I did not see it until convalescence was established. I am indebted to Dr. F. W. Wilcox for the following account:

Case 5. Miss D., a woman of about 25, was seized on Sunday with epigastric pain and vomiting. The following day there was marked distention of the stomach but none of the abdomen. There had been no bowel movement since Saturday and in spite of castor oil, calomel, salts and colonic enemas there had still been none on her entrance to the hospital on the fifth day. Her vomiting had cleared up on the third day but there was severe pain in the right hypochondrium and at the time of entrance to the hospital her condition was serious. The pulse was 90, temperature 101 and respiration 34. Her expression was bad, the abdomen markedly distended and except for absence of vomiting the case was typical of an intestinal obstruction. Large doses of castor oil and high enemas, including one of three ounces of soda, produced some movements of the bowels. On the following day the urine was examined and found to contain a very marked amount of acetone and diacetic acid. She was given soda by the mouth, and made a perfect and rapid recovery.

This case I believe to have been an ileus from acute acid intoxication, but I report it only as a possible and not a clearly proven one. In investigating this subject one is apt to become too enthusiastic and find acidosis in every case which shows a trace of acetone in the urine which, of course, is a mistake. In a case like this, when the acetone bodies are found late in the disease it must always be borne in mind that they may be the result of starvation, just as is probably the case in pernicious vomiting of pregnancy. However, as I have stated, acetone is found in adults suffering from the "grippe," and in diabetes and after anesthesia and I do not think that age offers a perfect immunity to what I consider the primary form.

The question arises after finding acetone bodies in the urine whether the condition is one of acid intoxication or not. To do this scientifically the ammonia output of the urine must be measured, the blood examined and perhaps most important of all the CO_2 tension in the expired air estimated as pointed out by Paul Roth[4]. Morse[1] gives the most characteristic symptoms as a peculiar dyspnœa or hypernœa without cyanosis and a diminished output of urine. He often finds vomiting, there may be diarrhœa or constipation and sometimes a white line about the mouth. Aside from the presence of acetone odor on the breath and the acetone bodies in the urine, I have found the most suggestive symptoms to be vomiting and drowsiness.

To summarize: Acetone commonly and

[4]Paul Roth. Journal A. M. A., July 31, 1915.

diacetic acid more rarely are found in the urine in all ages during the "grippe," and in childhood in the course of various infections. This may occur without symptoms and if so, should not be classed as acid intoxication. There is a form which I class as primary, in as much as no other disease is present which occurs not uncommonly in children and probably in adults as well. This may be a mild type with vomiting and dullness the predominant symptoms or of a severe type with pronounced ileus.

ACIDOSIS IN CHILDREN.*

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A few years ago practitioners all over the country began to have fatalities among their young patients from a disease or condition in which a symptom-complex was presented that at once attracted attention of physicians everywhere, and not described in textbooks on medicine or in current medical literature. After light anesthesia for so simple a procedure as a tenotomy or paracentesis, a child would promptly develop a group of symptoms inconsistent with the condition for which it came, or the work required, and die within a few days. A healthy breast-fed baby, at about the weaning time, presenting symptoms of a digestive disturbance, would rapidly become prostrated and pass away in coma in 48 to 60 hours. A bowel infection case would develop the same set of symptoms, and early end in death.

Laboratory workers in medical centers, and elsewhere, were not long in telling us that some of the acids normally found in the body are increased to a greater or less degree, and whose manufacture by the economy exceeds the power of the body to neutralize and eliminate them. The term acidosis or acid intoxication is applied, now well known to even the laity in many communities, and dreaded wherever known.

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The disease finds its chief interest in its etiology, and this leads us at once into a field of body chemistry in which a large amount of work has been done in the laboratory, and increasing interest has lead the ablest pediatricians of the country to give freely of their time and toil.

It is known that under normal conditions the blood contains large amounts of weak acids and their salts, and also that the healthy body performing its functions is making acids all of the time, as the result of oxidation. Measures and means are provided for the neutralization and elimination of these acids, and it is when neutralization and elimination fail to keep pace with production, or an excess of bases is removed, that a disturbance of the acid-alkali equilibrium of the body takes place.

Peabody says "Life itself depends on the maintenance of the reaction of the blood and tissues within very small normal limits, and that the composition of the blood certainly depends in large part on the activities of the fixed cells of the tissues." Again this same writer, quoting Henderson, tells us that the normal reaction of the blood, like the normal body temperature, is an important physiological constant.

The maintenance of the normal reaction of the blood is due to the blood itself; that is, its chemical composition and its power to eliminate acids. "It contains large amounts of weak acids and their salts, carbon dioxide and sodium bicarbonate, acid and alkali salts and sodium and potassium, and a high percentage of proteids which have both acid and basic characteristics" (Peabody). To a solution of such composition it is possible to add large quantities of acids without changing its reaction, whether introduced from without or produced within the body. The power of the body to eliminate acids is manifest by the excretion of non-volatile acids by the kidneys and a volatile acid—carbon dioxide—by the lungs. These acids are not poison, and do no harm unless produced in large

quantities, so large that the mechanism by which the blood maintains its reaction is broken, and an excess of bases is removed.

While this is taking place, the energies of the body are aroused to increase activity and vigor, and as Howland says, "The defenses break down and the reaction of the blood changes."

Clinically this state of affairs may be said to exist if the urine contains the acetone bodies, the pulmonary ventilation increased, and the alkali tolerance increased. Laboratory findings would show an increased amount of ammonia in the urine, the percentage of carbon dioxide in the blood increased, the plasma deficient in sodium bicarbonate, and the combining power of the hemoglobin with oxygen lessened.

Acidosis may be seen in nearly all of the acute infections of childhood, after chloroform and ether narcosis, excessive fat feedings, insufficient carbohydrate intake, starvation as a whole, cyclic vomiting, nephritis and diabetes. It may also occur, I believe, independent of any other infection, a distinct clinical entity.

The symptoms of the disease are usually a digestive disturbance, evidenced by nausea and vomiting, or diarrhœa or both, the odor of acetone to the breath—a sweet, fruity odor—present at the beginning, elevation of temperature much or little, a rapid pulse rate out of proportion to the temperature, flushed cheeks, and lips cherry red. The child is restless, thirsty and drowsy. The daily output of urine is less than normal, and does not contain diacetic acid at once, but it appears in a few hours and may be found at your next visit. When the nausea ceases after 24 or 36 hours, the stupor deepens, and this distinguishes acidosis from cyclic vomiting. In a progressive case a modified Cheyne-Stokes breathing develops, intestinal paresis take place, and coma supervenes. When these latter symptoms are present, the case is hopeless. A severe and quickly fatal form has been met with, in which to the above symptoms is added the loss of a large quantity of serum into the bowels, and lost from the body by that route, sometimes hourly and even more often free from flatus and feces. The body is drained of its fluid, hyperpyrexia develops, followed by convulsive seizures and death on the second day.

The treatment consists in clearing the gastro-intestinal tract thoroughly, the administration of alkali in the form of sodium bicarbonate in sufficient quantity to render the urine alkaline, and the giving of carbohydrate foods to spare the body fat. We usually give a child a glass of water to which a little sodium bicarbonate has been added. This may be vomited promptly. A colonic irrigation is given, and a dose of castor oil by mouth. If the oil is not retained, 1-10 grain of calomel every hour is given until effective. We prepare a saturated solution of sodium bicarbonate, each ounce of which represents 30 grains of sodium, and give a dose every hour day and night. Commence with a tablespoonful at a dose in a little ice water, and increase all you can as the patient tolerates it. The idea is to give all you can. One of my patients, a girl of six years, who has had repeated attacks of the disease, has taken 60 grains of sodium bicarbonate every two hours until an ounce was given.

The alkali must be kept up until the urine is alkaline, and then the case may be considered relieved.

A suitable food would be a 7 per cent milk sugar solution during the first 24 hours, after which a 1 per cent barley water, to which the milk sugar is added, is given.

If on account of nausea, or other cause, food can not be given by mouth, a 5 per cent solution of glucose is given per rectum.

Every child requiring anesthesia should receive enough soda to make the urine alkaline before taking the anesthetic. Every child with a digestive disturbance or diarrhœa in whose urine the acetone bodies are found, should receive the same treatment. Any ill child from whatever cause, in whom

this symptom is present, should not have this important part of treatment neglected.

My feeling at the present time is in favor of giving the sodium bicarbonate solution intravenously to the cases with persistent nausea, or in whom there is much loss of fluid, giving a dram to two drams in a 4 per cent solution, and repeating the same when required.

PYELETIS OF INFANCY.*

With special reference to its occurrence during the course of the infectious diarrheas.

J. W. WEST, M. D.,
Live Oak, Fla.

It is not my purpose to follow a textbook's description of this disease but only to bring out certain features which I believe will be of some practical value to some of those who may hear me. Some textbooks contain much I do not give. I give some things not in textbooks.

First, I wish to say that the disease complicates the infantile diarrheas far more commonly than is indicated by the textbook writers and far more commonly than is generally recognized among the general practitioners. This belief has ample confirmation in my own consultation experience.

In those cases of infectious diarrhea where the high fever continues and the general appearance of the child shows no improvement after there has been decided improvement in the diarrheal condition, our attention should always be turned to the kidneys; also in these prolonged cases the chills usually occurring at irregular intervals but sometimes at regular intervals, causing the physician to think that malaria has crept in as a complication. After beginning the use of quinine he soon awakes to the fact that the wrong drug is being used. Typhoid is another disease which is commonly suspected, but this can quickly be cleared by the Widal blood test as well as by the lack of certain typical symptoms. Otitis media should always be eliminated as a cause of the continued and irregular fever by careful inspection of the ears. This would eliminate all the more common diseases which are likely to complicate the diarrheas.

The one other disease that may be responsible for the continuing fever, and this is the one I especially wish to call your attention to, is most likely to be found by a microscopical examination of the urine. Given a specimen of turbid urine you would suspect trouble from the kidneys. A drop of this placed under the low power of the microscope will usually show large white pus corpuscles and numerous small round red corpuscles; chemical examination of the urine usually shows albumen. If you have not the microscope at hand the turbid specimen containing albumen taken in connection with the other symptoms already enumerated may usually be considered sufficient for a diagnosis; of course the microscopic evidence is conclusive and is the one which should be employed when practical.

I find one reason why the urine is not more often examined to be the difficulty in obtaining a specimen. A few years ago I heard this question raised by a lady physician before the section on pediatrics at the meeting of the A. M. A., at Atlantic City, by asking if a satisfactory specimen of urine could be obtained by squeezing the diaper. My own answer is, I hardly think so, as feces or starch or other foreign substances are likely to so fill the urine as to obscure the test. I know, however, there are several means by which a satisfactory specimen may be obtained. A test tube or bottle with a suitable sized neck may be used in the case of a male, being held in place by adhesive plaster; in case of the female the finger of a pair of worn-out rubber gloves together with the test tube, and adhesive plaster can be so fixed as to make it easy to get a specimen while the baby sleeps. Of course the

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soft rubber catheter may be used in either case, insuring a perfectly clean specimen. With a little preparation in advance these means are easily executed when you reach the bedside of your patient.

In these infectious diarrheas the infection is an ascending one coming from the infected feces and ascending the urinary tract beginning at the meatus passing upward through the urethra to the bladder, thence upward again from the bladder through the ureters till it reaches the pelvis of the kidneys.

This disease has been found to be about five times as frequent in the female as in the male. The difference in the anatomy of the two fully explains this ratio: first, the location of the female meatus and the larger opening makes it much easier for infection to enter than in the male. The long tortuous course of the male urethra as compared with the short straight course of the female is a further explanation.

The offending bacteria are usually found to be the colon bacilli, the same as found normally in the bowels, thus strongly indicating the source of the infection and its method of reaching the kidneys, viz.: from the anus to the urethra, urethra to bladder, bladder to ureters and ureters to the pelvis of the kidneys.

Treatment: This is simple and effective; only two drugs are needed—potassium citrate and urotropin. They are best given alternately for periods of three days each. Give the potassium citrate for a period of three days during which time the urine becomes alkaline; withdraw the potassium citrate for a period of three days and the urine promptly returns to its normal condition of acidity. During this period of withdrawal the urotropin should be administered for its antiseptic effect. Bacteria can not accommodate themselves very readily to these rapid changes from acid to alkali and alkali to acid; hence, they are disposed of much quicker by this method. At best it is a condition that yields but slowly yet surely to treatment, so it is well to bear this in mind when talking to the family. Allow yourself at least six weeks in which to effect a cure; if your patient should get well in a shorter time, no one will blame you.

THE IMPORTANCE OF MUSCLE REPAIR IN PERINEORRHAPHY.*

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Tampa, Fla.

The apparent simplicity of perineorrhaphy leads many men to do this operation without sufficient consideration of the fundamental factors essential to good repair work. This becomes evident to anyone who has opportunity to examine patients who have had their perineum repaired; often it will be found that the patient is not much better off than before operation owing to the fact that one important step in technique has been neglected.

It is the object of this paper to call your attention in a brief way to the importance of muscle coaptation in the repair of lacerated perineum.

In order to better understand what is meant by muscle coaptation in this work, permit me to review briefly what takes place when a perineum is torn. Towards the end of the second stage of labor, the presenting part dilates the vagina and its neighboring tissues to such an extent that these tissues are sometimes ruptured and a function is lost. One of these tissues is the levator ani muscle, also several adjacent muscles that are so arranged as to form the main support of the pelvic floor.

During a rupture, sometimes the levator ani is simply split in the median line and its fibres merely separated and not torn, at least to any great extent; in other instances the tear is in the direction of one or both vaginal sulci.

In the first instance, in which the levator is simply split, its function as a support is

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not materially impaired; in the second event an entirely different condition results. The muscle fibres are torn and their ends retracted; thereby the pelvic floor is robbed of its natural support.

In a large number of cases one must study the parts well to appreciate the damage done by the oncoming head.

Ordinarily at the time when the perineum is being repaired, the obstetrician is intent upon covering over the raw surfaces, coapting the parts, as best he may, using his efforts to unite any visibly torn parts, overlooking the vital part that the main supports of the pelvic floor is dependent upon good muscle coaptation.

This so-called pelvic sling is easily palpable just within the introitus vaginæ. One can hook the finger in each sulcus and determine if the support is gone. One does not feel the resistance on the side in which the muscles have been ruptured and realizes there is a difference between the two sides.

This musculo-fibrous sling is the important tissue that must be repaired, and no repair of a lacerated perineum will get results that does not reckon with its functions.

The history of perineum repair work dates back into the pioneer days of gynecology and it is useless to go into details; suffice it to say, nothing substantial was done until Emmet devised his "batwing denudation" operation.

This was a step in the right direction because an effort was made to dissect out the "levator ani sling" and coapt its severed fibres. This operation was devised for old lacerations. In most instances the operation resulted in simply narrowing the vagina, and in the course of time prolapse of the organs above was again evident.

Further study developed the fact that structures under the mucous membrane were the vital ones that had to be repaired, and ultimately the "flap-splitting" operations were devised.

Among the best is one used and described by Crossen of St. Louis. Double tenacula are applied at the junction of the mucous membrane and skin just below the opening of the vulvo-vaginal glands on each side and crossed to determine the size of the opening in the vagina when operation is finished. After this adjustment the parts are put on stretch and a small strip of mucous membrane denuded just within the vagina. This membrane is separated from the underlying scar tissue with a knife as a beginning.

The dissection is continued with a gauze-wrapped finger up into the sulcus until the musculo-fibrous sling is reached. This is recognized by its resistance, also by its muscular nature. If in doubt, hook the finger of the other hand in vagina and put tension on the sling, then one can observe the pull. Repeat the above procedure on the opposite sulcus. After the levator on each side has been exposed, secure same with two double tenacular forceps, draw them in opposition and suture with two or three figure eight sutures of 40-day No. 1 catgut. In fact this suture material is used throughout the entire operation.

After the sling is coaptated the adjoining tissues are brought together from side to side. The excess of mucous membrane flap above is trimmed off and nicely adjusted along with the skin, leaving a straight suture line coming out of the vagina on down the perineum.

Do not draw any sutures too tight as the swelling and edema is quite pronounced after these operations and the patient will suffer considerable pain. These operations have been developed as a secondary procedure, yet with some modifications can be done at the obstetrical bedside with a good chance for satisfactory results.

Obstetricians should determine beyond all doubt if the pelvic sling has been ruptured. If repair is necessary it should be done by some method embodying a coaptation of the levator ani, at this time of primary repair. The levator ani muscles are quite easily found, they have not shrunken, nor are they much retracted.

In tying, a little more allowance must be made for the customary edema. In doing this immediate repair as above outlined, I realize that more assistance must be available than is generally needed in doing immediate repairs in our haphazard way. The operative preparation and work will take more of our time and add somewhat to the obstetrical expense, but the patient will be amply compensated by the quicker and better recovery because of the improved circulation and support, and we ourselves in the satisfaction of a duty well done to our most deserving patients, "the lying-in-women."

DIAGNOSIS AND TREATMENT OF CHRONIC GONORRHŒA IN THE FEMALE.*

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Tampa, Fla.

In considering the diagnosis of chronic gonorrhœa in women, I will divide the patients suffering from this infection into two distinct groups. In group one we have that class of patients who are strictly honest with the physician when examined and thus aid him in his diagnosis. In group two we have that class of patients who for reasons best known to themselves try to throw a stumbling block in the path of diagnosis, in order that they may be considered free from infection. The patients of this latter group nearly always use the same subterfuge methods when examined for a gonorrhœa, namely, careful washing, douching and urinating just prior to examination, in this manner obscuring many important symptoms.

Knowing the female genitalia is constantly bathed in its secretion we must always take into consideration its anatomy, the canal-like opening extending from the vaginal orifice to the tubes and, especially, the close proximity of the urethra and the rectum to the vaginal orifice. Also we must not forget the Bartholonian glands and ducts, and the ease with which all these parts can become infected.

Of special importance is a knowledge of the structure of the mucous membrane lining all of these organs. It is this same mucous membrane upon which the gonococcus thrives so easily, and which contains numerous tubular glands, all lined with the same epithelium which give a ready field for the gonococcus to hide and grow and multiply. It is due to these glands that the bacteria can burrow into and cause this chronic condition.

We have been taught much about the so-called normal vaginal flora, the bacteria present in this flora, being indigenous to these parts. When we consider the numerous different kinds of microorganisms, that can be plated out in petri dish culture from the vagina, of the perfectly healthy woman which, under normal conditions, never give rise to any pathological changes, we can then readily appreciate this teaching. On the other hand we must not forget that many of the bacteria belonging to the so-called normal vaginal flora, and not giving rise to any pathological condition under normal circumstances, belong to that class of bacteria known as the facultative group, that is, they can become pathogenically virulent under favorable conditions and surroundings. It is in infections from without, as in a gonorrhœa, that these same facultative bacteria become in themselves an additional source of trouble, by becoming pathogenic. I will state right here that the gonococcus is not an organism belonging to any other but a pathogenic variety, and that there is no such condition as a latent gonorrhœa. This is my firm belief, for where the patient was not cured of a gonorrheal infection the gonococcus could always be demonstrated, where on the other hand I could not demonstrate the presence of the gonococcus in patients who were thoroughly cured, in spite of repeated and careful examinations. Also that the gonococcus is not an organism that

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will remain dormant for any period of time, but rather one which will make its presence known in more ways than one.

Therefore let us discard the thought of relapses, or autoinfections of a gonorrhœa in the female, knowing that there can exist no such condition, when we take into consideration the bacterial pathogenicity of this microorganism. For once the cause of gonorrhœa be thoroughly removed, there can be no pathogenic condition of this disease present, and no relapses or old exacerbations or auto-infections occur unless a new infection takes place. With these facts in mind, my technique is as follows:

I try to get as concise a history as possible, laying special stress on the following: I try to ascertain the age of the individual at the first menses, and whether or not the first menstrual period was accompanied by any dysmenorrhœa. If so, just what form of dymenorrhœa the patient experienced at that time, also if there were present any menstrual disorders during any subsequent menstrual periods. If any irregularity of the menses occurred, I try to ascertain what form of irregularity it is. I next try to discover the length of the menstrual duration, as to its quality, quantity of the flow, whether profuse, scant, or medium. It is advisable to ascertain the date of the last menses to make sure if there be any pregnancy or not, also as to the number of pregnancies, miscarriages and abortions.

My next inquiry is if at any time there had occurred any inflammation about the genitalia; if so, how long back, its character and duration. Also if the patient suffers or has ever suffered from a vaginal discharge; if so, its characteristics as to period, quantity, color, odor, and if it caused staining of the linen. Also if there be present any burning or smarting during micturition, and its frequency.

Taking into consideration the important role the genito-urinary organs play to the rest of the body, I make careful inquiry into the general health of the patient, a step often overlooked in the press of a busy practice. I ascertain if the patient suffers or has suffered any pain; if so, its location, whether localized, radiating, constant, sharp or dull, and especially if the pain has any relation to the menses or not.

The physical examination is divided into inspection of the parts, and into palpation. By inspection we can ascertain any inflammatory appearance, and any discharge, its character, and quantity, also if there be any involvment of the cervix. We can also note any perineal lacerations or erosions, or glandular involvement of the labia. By the bimanual examination we can ascertain the contour, consistency and position of the uterus, the condition of the tubes and ovaries, and if there be any pelvic abscess or any other involvement of the surrounding parts. The microscopic examination consists of making smears from the cervix, vaginal fornices, from the moist surface of the mucous surface of the labia, and by stripping the urethra, making a smear from any secretion that we find there. I next have the patient urinate in several glasses to ascertain if there be any bladder involvement. For the examination of the smears, I refer you to any textbook on bacteriology. This I will say: It is absolutely impossible to treat this disease without the aid of the microscope.

In those cases where it is impossible to make a definite diagnosis at the first examination, I insert a plain glycerine tampon into the vagina, leaving it in situ from twelve to eighteen hours, instructing the patient to remove it at a definite hour, and to hold her urine for several hours just prior to examination, not to wash or douch, but to let everything remain just as it is until examined. In this manner, by the hydroscopic action of the glycerine, there is quite a discharge produced, giving the examiner a better field to work on. I very seldom have to repeat my examination after the second visit to clinch my diagnosis. In all my cases where there was a gonorrhœa present, of the

vagina or any of its adnexa, I invariably found the urethra and bladder also infected. In only three cases out of two hundred and twenty that came under my observation did I find the rectum involved, and these readily responded to treatment.

In considering our treatment we come to the most important factor in handling this class of cases. On our treatment alone depends whether a cure can be accomplished or not. When we consider how easily the general health of the patient can be affected, due to the absorption of the toxins generated by the infection, these same toxins having a very deleterious influence, and in addition, when we consider the tremendous nervousness due to constant worry, we can readily see what a marked influence all this has on the general health of the patient. It is for these reasons that in these cases I always try to build the patient up, avoiding all drugs that would have a deleterious effect on the stomach.

I am convinced that gonorrhœa is a local infection only, and as I have previously stated that this infection effects the general health only in a reflex manner.

Therefore such being the case, I consider the prescribing of cubeb, oil of sandal, methylene blue, copaiba, etc., erroneous, as these drugs tend to cause gastric disturbances, interfering with digestion, and in this manner lowering the resistance to disease and infection. If prescribing must be done, rather give some drug that will build up the patient and increase her resistance to disease.

I have, from my observation, found a little or no anti-gonorrhœal properties these drugs are supposed to have, whilst I have had excellent results from local treatment only.

Realizing that any drug that will coagulate tissue will form a protective barrier behind which the gonococcus will thrive, and also that it is necessary for a antiseptic to come into actual contact with a microbe, long enough before it can have any good effect, I have from experience limited myself to such antiseptic solutions as would overcome this, and produce results.

For the urethra and bladder I use a solution of permanganate of potash, ranging in strength from 1-10000 to 1-800 as the patient can stand it. I use this solution as an irrigation, using an acorn-tip nozzle tightly pressed to the mouth of the urethra when filling the bladder. It is not necessary to use a catheter, as in irrigating the bladder you at the same time treat the urethra. I keep the irrigation treatment up as long as there are any gonorrhœal manifestations of the parts present.

In the vagina I use a 10 per cent to a 20 per cent protargol solution only, as I find this drug best of any. I have tried different strengths of argyrol, but do not find it better than protargol, and as it is a rather dirty process, I have discarded its use wherever I can. I also use the glycerine and the boroglycerine as well as the protargol-glycerine tampons in the vagina, leaving the tampon in situ for eight to ten hours and changing for fresh tampons as often as possible. In this manner I get almost constant medication. The cervix I cauterize with pure carbolic acid, followed by alcohol in order to prevent the spread of infection.

Where the uterus is infected I make local applications to it. I have tried many methods of intrauterine medication in gonorrhœa, such as medicated uterine bougies, direct medicinal application, etc. The best and most efficatious method of intrauterine medication is with the use of the regular gonorrhœal syringe, having a soft rubber tip nozzle acorn in shape. Using a solution of two per cent protargol, I grasp the lip of the cervix with a hook or tenaculum to steady it, then pressing the tip of the syringe hard against the cervical opening, very much as injecting the urethra, I fill the uterine cavity with as much fluid as it will hold, then insert a tampon into the vagina. My idea is that we not only make local application to the uterine cavity, but at the same time force some of the application fluid

into the tubular openings of the mucous membrane. In this manner we make the surrounding field very unproductive to the germ.

A very important factor is douching, and douching properly. Of all the different antiseptics for uterine use I like the permanganate solution best, and always advocate its use wherever I can. The strength of solution I use is from one to three thousand to one in three or five hundred. Keeping in mind the necessity of the solution reaching the gonococcus, and keeping in contact with it long enough to destroy it, I instruct my patients to contract the labia around the douch nozzle by using pressure with the fingers, thus causing the fluid to baloon the vagina out, allowing at the same time the antiseptic solution to get in its work.

The treatment outlined will suffice in the average case of gonorrhœa. If there be any complications present the physician then must use his judgment, as there are no two cases exactly alike. We may form an average, but on careful study of the cases we can nearly always detect some differences.

At various times during the treatment I make careful microscopic examination to determine the progress of the disease. When I am unable to find any gonococci after repeated examinations, especially when those examinations are made directly before and after each menses, then I thoroughly curette the uterus and the cervix. After this I keep the patient under observation for a period of at least six months, making repeated careful examinations during that time and also try to make every possible test to ascertain if the patient be cured.

I never consider taking a case of gonorrhœa under treatment for a less period than six months and often longer, as it is much more difficult to cure a gonorrhœa in the female than in the male. As to the sterility of the patients having had a gonorrhœa, and especially where they have had a gonorrhœal pyosalpinx, I have seen in two per cent of my cases, who have had these complications, after having been cured, give birth to normal healthy children.

In summing up this paper I will state that gonorrhœa in women is more common than we think; that it is a thoroughly curable disease, leaving practically no bad after effects, if properly treated; that it can not be treated without the aid of the microscope, and women infected with this disease should be treated over a long period of time, due to their complicated anatomical and histological structure, and especially no patient to be considered cured until after having undergone a satisfactory probation period.

THE BACTERIOLOGY AND THE CHANNELS OF INVASION IN ACUTE OTITIS MEDIA.*

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Daytona, Fla.

The excuse for bringing this common condition before the society is because of its frequency and largely to present simple suggestions in prophylaxis. The writer has been impressed in his work by the complication of acute otitis media in tonsillitis with enlarged and infected tonsils and adenoids. It must be that most of us have observed this. Where does this infection come from and how can it be avoided?

Putting aside the lowering of the resistance which is conducive to germ development, let us consider how we can avoid houseing these bacteria in the glands of the throat and nasopharynx.

Does it not resolve itself into a sanitary condition? Should we not insist upon more attention to the teeth and mouths of such subjects? From observation the writer concludes that inflammations of the throat and ears are less common in persons who are careful about such things. In susceptible subjects, *the teeth should be thoroughly cleansed after each meal, the gums brushed*

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and the throat washed and gargled. Alkaline antiseptic mouth washes are most certainly helpful and pure running water is not to be ignored. The mechanical act of gargling greatly assists in opening the mouths of the eustachian tubes and thereby promotes drainage from them. Gargling constricts the pillars of the pharynx and acts mechanically by expressing infected material from the crypts of the tonsils. After infection has become established and we have chronic inflammation with hypertrophy we must resort to surgery. By simple hygienic measures much that predisposes to otitis media can be avoided.

The exciting cause of acute otitis media is the presence of pathogenic microorganisms in the middle ear. The microorganisms most frequently are: Staphlococcus pyogenes albus and aureus, the diplococcus of pneumonia, streptococcus pyogenes and the bacillus pyocyaneus. Each may be found alone or two varieties mixed, making it impossible to state which the primary causative agent is. Acute otitis media is a frequent complication of the acute exanthemata of children.

In measles the ears are often extensively involved but with less destruction than in diphtheria and scarlet fever. In inflammations of the middle ear we find principally the streptococcus. The diplococcus of pneumonia is frequently found in the secretions in pure cultures, even where there is no involvement of the lungs.

The avenues of infection are through the eustachian tubes, through the external meatus and a perforated tympanic membrane, through the dural processes in the petro-squamous fissure, and hematogenous; which is through both the lymph and blood vessels. All of the latter named avenues are secondary to the eustachian tubes in frequency and importance. Nature has provided a great barrier against invasion from the nose and pharynx in the ciliated epithelium of the tubes, which motion is from the tympanic cavity towards the pharynx. It is when this epithelium is rendered defective that the exciting cause may enter. The main defense against invasion is a healthy organism, the absence of obstructions and of pathogenic bacteria. Infections of the faucial and pharyngeal tonsils have more to contribute in acute otitis media than all the other causes combined. These glands when infected are not necessarily enlarged glands. Relief can be expected and promised from treatment directed to the nose and pharynx.

Following the sequence of infection we may conclude that it comes from the air or food, laden with dust or germs taken in through the nose and mouth. These germs are incubated and housed in the mouth, nose and throat of individuals who do not take the trouble to remove them. Subjects who have been in a foul, noxious, dirty and dusty atmosphere will do well to irrigate their nasal cavities and thereby avoid infections of the accessory cavities. Persons who keep their mouths and teeth clean are less liable to infection of the ears.

PROPAGANDA FOR REFORM.

ORTHOFORM — NEW.—Treasury decision 2194 contemplates registration of orthoform—new under the Harrison Narcotic Law. (*Jour. A. M. A.*, Dec. 25, 1915, p. 2257.)

SO-CALLED SECRETIN PREPARATIONS. — At the request of the Council on Pharmacy and Chemistry Professor A. J. Carlson of the University of Chicago has studied the action of secretin when administered by mouth or directly into the intestine and also investigated the secretin content of certain alleged secretin preparations. Carlson and his co-workers, like all previous investigators, found that secretin, when given by mouth or introduced even in enormous doses directly into the intestine, is entirely inactive. Further, they were unable to demonstrate the presence of secretin in samples of Secretogen and another supposed secretin preparation (Duodenin) bought on the open

market, except that one bottle was found which contained a little secretin. Carlson and his co-workers conclude that there is as yet no reliable evidence that lack of secretin is a primary or important factor in any disease and that, should this be established, secretin therapy, to be effective, must be intravenous. The Council indorsed the work of Professor Carlson. (*Jour. A. M. A.*, Jan. 15, 1916, pp. 178 and 208.)

STRONTIUM BROMIDE. — The official bromide contains about two-thirds as much bromide as is contained in potassium bromide and about three-fifths as much as that contained in sodium bromide. Hence it may be expected that the bromide action from strontium bromide will be much less than that of either potassium bromide or sodium bromide. (*Jour. A. M. A.*, Jan. 29, 1916, p. 376.)

OXYBON DECLARED FRAUDULENT. — On January 15, 1916, a fraud order was issued by the postmaster-general against the Oxybon Company, Chicago. The Oxybon was one of the gas-pipe frauds, which included the Oxydonor, the Oxypathor, and the Oxygenor. (*Jour. A. M. A.*, Feb. 12, 1916, p. 526.)

THE THERAPEUTIC VALUE OF THE HYPOPHOSPHITES.—At the request of the Council on Pharmacy and Chemistry, Dr. W. M. Marriott, Johns Hopkins University, has examined the evidence for and against the therapeutic value of the hypophosphites. Experiments were carried out to determine the "food" value of hypophosphites. The hypophosphites were introduced into medicine by Churchill in 1858 on the basis of an incorrect theory and utterly insufficient and inconclusive clinical evidence; their use has been continued without justification by any trustworthy evidence for their efficiency. By actual trial on human subjects Marriott shows that at least 85 per cent of the ingested hypophosphites are excreted unchanged. Further, he holds that there is no proof that the remaining 15 per cent is available to the organism. It is doubtful if there are any conditions in which the body suffers from lack of phosphorus. Marriott concludes that there is no reliable evidence that hypophosphites exert a physiologic effect; it has not been demonstrated that they influence any pathologic process; they are not "foods." If they are of any use, that use has never been discovered. (*Jour. A. M. A.*, Feb. 12, 1916, p. 486.)

FERMENTED MILK.—While there is no conclusive evidence that Bacillus bulgaricus is able to establish itself in the intestine in such a way that other bacteria are driven out, it is undoubtedly true that in many cases marked improvement has resulted from the ingestion of milk cultures made from it. It is by no means certain, however, that the results which have been obtained by the use of milk cultures have been attributable to any peculiar virtue in the organism itself. The beneficial effects of a sour-milk diet is attributable, perhaps, not so much to the bacteria contained in the milk as to the milk itself, which provides material for an acid fermentation in the intestine. Fermented milk is so well tolerated in many cases that their use should in general be encouraged from the standpoint of nutrient values, quite apart from the problematical "autointoxication" propaganda. (*Jour. A. M. A.*, Feb. 19, 1916, p. 574.)

CALDWELL'S SYRUP PEPSIN.—Some of the claims made for this "patent medicine" are "Positive Relief for Constipation," "Dispels Colds, Headache, Fevers and all ills caused from Bad Digestion, Foul Stomach, Torpid Liver and Sluggish Bowels." While the name and the claims suggest the presence of pepsin, L. F. Kebler, the government chemist, reported that this nostrum is an aqueous alcoholic solution containing laxatives flavored with oil of peppermint and devoid of any appreciable amounts of pepsin. Regarding the laxative constituents the A. M. A. Chemical Laboratory reports that a senna preparation is the essential laxative constituent. (*Jour. A. M. A.*, July 31, 1915, p. 447.)

STRONTIUM SALICYLATE NOT SUPERIOR TO SODIUM SALICYLATE.—In a series of carefully controlled trials, carried out in the Lakeside Hospital, Cleveland, M. A. Blankenhorn shows that strontium salicylate possesses no advantage over sodium salicylate as regards either therapeutic efficiency or freedom from undesirable by-effects. The salicyl content of strontium salicylate is about four-fifths that of sodium salicylate. This smaller salicylate content may have contributed to the notion that strontium salicylate is less likely to cause salicylism. This notion may have also arisen from the fact that the more expensive preparations are likely to be given in smaller doses than the cheaper sodium salicylate. That the strontium salt of salicylic acid has no advantages over the sodium salt, has also been pointed out in the report of the Council on Pharmacy and Chemistry on Rheumalgine. (*Jour. A. M. A.*, Jan. 29, 1916, p. 331 and 362.)

HYPOCHLORITES IN INFECTED WOUNDS.—Dakin points out that he claims no credit for the "discovery" of the "new antiseptic." He explains that the "new antiseptic" was discovered by Berthollet in 1788. The solution used by Dakin and others is essentially the well-known Labarraque's solution or solution of chlorinated soda. The claims as to the efficiency of the various modifications which are being used in France and England are decidedly contradictory. The one conclusion which all results with the various hypochlorite solutions appear to justify is that hypochlorites, whether applied in an acid solution, in an alkaline solution or in a neutral solution, are of genuine value in the treatment of infected wounds. (*Jour. A. M. A.*, Feb. 5, 1916, p. 430.)

THE EFFECT OF OPIUM ALKALOIDS ON RESPIRATION.—D. I. Macht has reinvestigated the effect of opium alkaloids on respiration. He divides the alkaloids of opium in two classes: In the one class is morphine, the prominent sedative alkaloid, which may not interfere with efficient respiration when the dose of the drug is small, In contrast with this are narcotin, papaverin, narcein, thebain and cryptopin, all of which are stimulants and in large doses are excitants of the respiratory center. Codein belongs to the morphin class, though in large doses it may also excite the respiratory center. The action of mixtures of opium alkaloids is a summation of their individual effects. It thus appears that if the object sought is a reduction of the labored activity of the respiratory muscles in a given case, the drug opium itself or mixtures of its alkaloids are to be preferred to morphine alone. If, on the other hand it is desired to diminish the excitability of the cough reflex mechanism, it seems that a simple substance, as morphine or codeine, is to be preferred. (*Jour. A. M. A.*, Feb. 12, 1916, p. 514.)

DIARSENOL. — Diarsenol, Synthetic Drug Company, Toronto, Canada, is said to be chemically identical with salvarsan. It has not been examined in the A. M. A. Chemical Laboratory nor do any reports of trials appear to have been published, which demonstrate its value or safety. As salvarsan is covered by United States patent the American agents for salvarsan will probably object to the sale in the United States of a substitute. (*Jour. A. M. A.*, Feb. 19, 1916, p. 590.)

PROPRIETARY DIGITALIS PREPARATIONS.—The Council on Pharmacy and Chemistry reports that it is becoming increasingly apparent that the tincture of digitalis produces the full therapeutic effects of digitalis, and that when it is properly made it is as stable as any liquid preparation of digitalis now available; and that the tincture has the systemic side actions of digitalis, including the emetic, in no greater degree than the various proprietary preparations of this drug. Strophanthin and crystallized ouabain are now available in sterile solutions in ampules and afford a convenient means of promptly securing the cardiac action by intramuscular or intravenous injection. (*Jour. A. M. A.*, Dec. 4, 1915, p. 2024.)

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THE NATIONAL DEFENSE BILL AND THE ARMY MEDICAL SERVICE.

The national defense bill, signed by the president, June 3, fixes the proportion of medical officers at seven to each thousand of the enlisted strength of the army. This proportion, which existed at the outbreak of the Spanish War and was again restored in 1908, has been seriously reduced through gradual increase of the army, until the enlisted strength had grown 35 per cent without the addition of a single medical officer.

The new law provides for a definite ratio rather than for a fixed number of medical officers. This will automatically prevent any changes in the ratio in the future. The period of service required of medical officers before promotion to the grade of captain has been increased from three to five years. The medical reserve corps is abolished one year after the passage of the act. Officers of the reserve corps may be appointed to the medical section of the officers' reserve corps, in which body commissions may be issued in three grades—lieutenant, captain and major. Officers of the dental corps are open to promotion to the grades of captain after eight years' service, and to that of major after twenty-four years' service, subject to the same examination conditions as obtain in the medical corps. Veterinary surgeons of the army are formed into a separate corps attached to the medical department, and are given promotion to the grade of major. The hospital corps is hereafter to be known as the enlisted branch of the medical department, and several new grades, such as master hospital sergeant and hospital sergeant, are created. Through a reduction in the proportion of privates first class in this department, the pay of 75 per cent of the enlisted men in the medical service will be reduced from $18 to $16 a month. As the care of the sick is not particularly attractive work to the ordinary soldier, this reduction will probably increase the difficulty of obtaining recruits of fit character and intel-

ligence for the medical service. The new law does not provide any promotion for medical officers above the grade of colonel, except the single position of Surgeon-General of the Army. Provision is made for the assignment of five officers of the medical corps for duty with the medical relief department of the Red Cross, and the erection of storehouses by the Red Cross on military reservations or the use of government buildings as such storehouses.

The new law is highly satisfactory in that it establishes a permanent ratio between medical men and enlisted men, provides for an efficient medical reserve, raises the standard of dental and veterinary surgeons, and improves conditions regarding promotion and grade. It is unsatisfactory in that it reduces the pay of enlisted men in the medical corps and so increases the difficulty of securing satisfactory nurses and attendants in military hospitals. This defect, however, can readily be remedied by later amendment.—*Journal A. M. A.*

THE ARMY MEDICAL SERVICE AS A CAREER: AN OPPORTUNITY.

The glamor of military preparedness from a national point of view should not be allowed to obscure the fact that from the standpoint of the individual there has never been so good an opportunity as at present for the physician who desires to enter as a career the medical corps of the army. For competent men there is the certainty of immediate appointment, and the chances of rapid promotion are all that any reasonable person could wish. Through the operation of the recently enacted army reorganization law there are now more than 100 vacancies to be filled; and as the annual increases for which the law provides are made from year to year within the next five years, the men now appointed, if they have proved their fitness for the service, will be rapidly advanced to higher grades. If the president, without waiting for the expiration of the stated annual periods fixed by the act, should exercise the right given him in event of actual or threatened war or similar emergency to organize the entire increase authorized by the law, or any part thereof, that he might deem necessary in addition to the one-fifth that he is required to organize annually, appointments in the near future will be even more numerous and promotions more rapid. Of course, the tenseness of our international relations and a natural spirit of resentment for the unprovoked destruction of American lives tend just now to drive every man possessed of any good red blood toward the military arm of our government, and a physician inclines naturally toward service in the medical corps. But leaving all that aside and looking on the service as offering a career in time of peace as well as in time of war or threatened war, it will be found to invite as do few other fields of medical endeavor. It offers a more than fair living wage, under most congenial conditions, a wage and condition that are certainly superior to those pertaining to the average medical practice. To the physician of a scientific turn, its opportunity for rational practice along strictly scientific lines presents an almost irresistible appeal. Opportunities for study and research in favorable environments are numerous, and officers are encouraged to avail themselves of them. The sacrifice of personal liberty of action which the officer must make for the efficient operation of the service is hardly any greater, if as great, as the surrender of his own independence that all successful practitioners, and many unsuccessful ones, make to the whims and caprices of their patients. While the foregoing applies to the army, it must not be forgotten that the navy also offers opportunity to physicians, but of different kind. Applicants who successfully pass examinations attend the course of instruction at the Naval Medical School, during which time they receive a substantial salary. At the end of this course, if successful, they are commissioned as assistant surgeons in the

navy. A review of recent advances in medical science—particularly in the field of hygiene—indicates that many of the most significant discoveries have been the result of research conducted by officers of the U. S. Army and Navy Medical Corps. The work is not, as many imagine, a dry routine. Exceptional opportunity is offered for independent observation and research. The man of an investigative turn of mind need not be lost as a mere unit in a government bureau, but may express his personality and receive the reward of his personal endeavor. —*Journal of the American Medical Association.*

DISEASE DANGERS OF WAR WITH MEXICO.

Two years ago *The Journal of the American Medical Association* discussed the sanitary problems which must be met if our troops should have to go into Mexico for any length of time. "Today," says *The Journal* for June 24, 1916, "these problems should be considered again. The state militia is mobilizing; large bodies of men are already being concentrated in camps and soon perhaps some will be moving to the Mexican border, if not into Mexico. The guarding of the border is likely to be the duty which will fall particularly to the militia and less trained troops. Actual invasion, if it should come, will no doubt devolve on the regular army.

"Typhoid and smallpox vaccination have practically removed the menace to life from these diseases under military conditions. The militia, however, has not been immunized against typhoid even approximately to the extent that the regular army has been vaccinated. The danger from dysentery, which is still a menace to men in army camps, has been materially lessened through improvements in the preservation and protection of foodstuffs and through increased facilities for the transportation of supplies. Amebic dysentery may be prevented by strict supervision of water supply and filth disposal. The use of emetin in the treatment of this condition will aid in rapidly eradicating such cases as may occur. Malaria and yellow fever, conquered through eradication of the mosquito and prevention of mosquito bites, are no longer to be feared. Cholera, preventable by cleanliness, and typhus fever, the scourge of Mexico, also have been studied, and their prevention can be accomplished by the enforcement of adequate sanitary regulations.

"The sanitation of camps has developed into a science. In the development of this science American investigators—many of them officers of the medical corps of the United States Army and of the Public Health Service—have led the way, and they may be depended on to carry out these measures to the fullest extent. Typhus fever is particularly a Mexican problem. It has been a factor in the present European war, and the measures instituted abroad show how completely this disease may be controlled. Much has been said in connection with the European war of gas gangrene, tetanus and secondary wound infection. The frequency of these infections has been attributed to the cultivation of the soil in the region in which the war is being conducted. If this be the cause, this condition is certainly not to be feared in Mexico. Much of the warfare in Europe has been trench warfare, and diseases peculiar to this method of warfare have frequently been discussed. The problem in Mexico would appear to be a different one. In any event, it hardly seems likely that the old saying that 'disease kills more men than bullets' will hold true.

"We can be sure that American medical officers of every branch of the service will do all that is humanly possible to protect our soldiers in the field. As a result of their service, the American soldier will be safeguarded so that the maximum number of efficient fighting units will be continually available to those concerned with the action of troops at the front."

THE CENTENNIAL OF THE STETHOSCOPE.

One of the great steps in the advancement of internal medicine was the discovery of auscultation. One hundred years ago, in 1816, Laennec, a favorite pupil of Corvisart, was appointed to the position of chief physician at the Necker Hospital in Paris. He was then 35 years of age. There he began his early studies on mediate auscultation with an instrument to which he gave the name of stethoscope. * * * Hippocrates, says Sir Benjamin Ward Richardson, himself might have invented it, and would at once have understood it. Then followed the naming of sounds natural and diseased, throughout all the respiratory divisions, and after them the sounds of the heart, internal and external. We hold the literature thus founded, the language thus invented, to the present hour, the biographer writes: it is as familiar in our mouths as household words.

Immediate auscultation—the direct application of the ear to the chest—was tried by Hippocrates. We are told of this by Laennec himself, who quotes a passage from "De Morbis" to substantiate the statement. The limitations of such a method were clearly described by the French clinician. The process of mediate auscultation was therefore invented by him. It is worth while to read the early story of the stethoscope in Laennec's own words:

In 1816 I was consulted by a young woman laboring under general symptoms of diseased heart, and in whose case percussion and the application of the hand were of little avail on account of the great degree of fatness. The other method just mentioned —immediate auscultation — being rendered inadmissible by the age and sex of the patient, I happened to recollect a simple and well-known fact in acoustics, and fancied, at the same time, that it might be turned to some use on the present occasion. The fact I allude to is the augmented impression of sound when conveyed through certain solid bodies, as when we hear the scratch of a pin at one end of a piece of wood on applying our ear to the other. Immediately, on this suggestion, I rolled a quire of paper into a kind of cylinder, and applied one end of it to the region of the heart and the other to my ear, and was not a little surprised and pleased to find that I could thereby perceive the action of the heart in a manner much more clear and distinct than I had ever been able to do by the immediate application of the ear. From this moment I imagined that the circumstance might furnish means for enabling us to ascertain the character, not only of the action of the heart, but of every species of sound produced by the motion of all the thoracic viscera, and, consequently, for the exploration of the respiration, the voice, the rattle, and perhaps even the fluctuation of fluid extravasated in the pleura or pericardium. With this conviction I forthwith commenced, at the Hospital Necker, a series of observations, which which have been continued to the present time. The consequence is that I have been enabled to discover a set of new signs of diseases of the chest, for the most part certain, simple, and prominent, and calculated, perhaps, to render the diagnosis of the diseases of the lungs, heart, and the pleura as decided and circumstantial as the indications furnished to the surgeon by the introduction of the finger or the sound in the complaints wherein these are used.

With the stethoscope in its various improved, modern forms as a daily—almost hourly—aid to every practitioner of today, it is needless to point out the part which this simple instrument plays in clinical medicine. Laennec's invention was individual in an unusual degree. No one could exhibit jealousy or display rivalry or claim priority. The actual simplicity of the discovery, coupled with its overwhelming usefulness, says Richardson, concealed its greatness until its history was made, and its originator stood alone in his glory. The history of the adoption of the stethoscope into practice shows that men in medicine, like those in

other walks of life, may show a pronounced capacity for resisting the inroads of knowledge. Mental inertia does not always fade in the light of novel and progressive ideas. So the "listening tube" of Laennec found its critics in the olden days. It was looked on by a few as a toy. Others complained that it was inconvenient to carry the original instrument—a cylinder of wood a foot long, divisible in the middle to make it easily portable. It was easier, so the statements went, to apply the ear directly to the chest of the patient, and furthermore, one thus perceives more sounds at the same time. It is no longer necessary to explain and reply as Laennec did. What he wrote in his classic work on "Mediate Auscultation" still holds good:

"I do not hesitate to affirm that physicians who confine themselves to immediate auscultation can never acquire very great accuracy of diagnosis, and will from time to time be liable to commit serious errors."—*Journal of the American Medical Association.*

Cancer Department

"In the early treatment of cancer lies the hope of cure."

AMERICAN SOCIETY FOR THE CONTROL OF CANCER

CANCER OF THE BLADDER.

Cancer comprises about fifty per cent of the tumors of the bladder, and is usually preceded by a benign growth, a papilloma, therefore the high rate of inoperability of bladder neoplasms when first seen by the surgeon should be capable of a great deal of improvement.

Since the advent of the cystoscope the interior of the bladder may be inspected with almost as much ease as the skin, and beginning neoplasms discovered before they become malignant. Judd in reporting a series of cases of bladder tumors occurring in their clinic, found that about thirty-two per cent were inoperable when examined; also that the average time elapsing between the appearance of symptoms and the surgical consultation was something over three years. The most constant symptom during this interim is bleeding, which occurred in over ninety per cent of the cases. This varied from a slight almost microscopic amount of blood to a profuse hemorrhage. Hemorrhage in the cases of papilloma usually begins by sudden painless attacks of bleeding lasting for a few days and then clearing up entirely with no symptoms in the intervals. The attacks gradually become more frequent until finally there is an almost constant bleeding, indicating the advent of a malignant change in the papilomatous growth. The other common symptoms of bladder neoplasm are, in the order of their frequency: frequency of urination, pain at the beginning and end of the act, pus in the urine, and difficulty in starting and stopping the stream.

Given the above symptoms in a man over thirty-five years of age one should adopt as a safe rule of procedure the habit of considering the case one of malignancy until it is proven otherwise, and should lose no time in establishing such proof. The treatment of the papilomatas by the cystoscopic application of the fulgurating electric current is so simple and usually so satisfactory that these potential cancers should never be allowed to go untreated long enough to become cancers.

The man who treats hemorrhages from the bladder by the internal administration of urotropin, and the local application of an irrigating fluid, without finding out the cause of the hemorrhage, is a criminal.

MEDICAL CORPS OF THE U. S. NAVY.

The next examination for appointment in the Medical Corps of the Navy will be held on or about August 7, 1916, at Washington, D. C., Boston, Mass., New York, N. Y., Philadelphia, Pa., Norfolk, Va., Charleston, S. C., Great Lakes (Chicago), Ill., Mare Island, Cal., and Puget Sound, Wash.

Applicants must be citizens of the United States and must submit satisfactory evidence of preliminary education and medical education.

The first stage of the examination is for appointment as assistant surgeon in the Medical Reserve Corps, and embraces the following subjects (a) anatomy, (b) physiology, (c) materia medica and therapeutics, (d) general medicine, (e) general surgery, (f) obstetrics.

The successful candidate then attends the course of instruction at the Naval Medical School, which will begin on or about October 1, 1916. During this course he receives a salary of $2,000 per annum, with allowances for quarters, heat, and light, and at the end of the course, if he successfully passes an examination in the subjects taught in the school, he is commissioned an assistant surgeon in the navy to fill a vacancy.

Full information with regard to the physical and professional examinations, with instructions how to submit formal application may be obtained by addressing the Surgeon General of the Navy, Navy Department, Washington, D. C.

THE THREE "C'S" OF CARING FOR MILK IN THE HOME.

The three "C's" for the proper care of milk in the home, according to the dairy specialists of the U. S. Department of Agriculture, are:

Keep milk { Clean / Cold / Covered

Milk is a highly perishable food and the length of time it will remain sweet and safe, especially for children, depends, the specialists say, almost entirely upon the constant care it receives from cow to consumer. Milk passes through three agencies—the producer, the dealer, and the consumer. If the first two have done their part, clean, safe milk will be delivered, thoroughly chilled, to the consumer. The consumer's responsibility begins the moment the milk is delivered at his doorstep.

Because milk poured from vessel to vessel on the street is very liable to contamination from dust, manure particles and germs, milk is best delivered in capped bottles. If bottled milk can not be obtained, the housewife should try to have someone in the family receive the milk in a clean, scalded utensil, cover it instantly, and put it without delay into the refrigerator, or the coldest available place. Under no circumstance should an uncovered pitcher, bowl or pan be left out on the porch to receive bulk milk. The vessel, both before and after the milk is poured into it, is accessible to flies and collects particles of dust and dirt.

Even in the case of bottled milk, however, the consumer must see that the bottle is not left out in the heat for a moment longer than is necessary. Milk should be delivered and kept at a temperature of 50° F. or lower—the colder the better. At such temperatures bacteria develop very slowly and milk undergoes little change until consumed. A slight rise in temperature above this point, however, permits bacteria to multiply rapidly and brings about rapid deterioration of the milk, which may render it unfit for ordinary use and make it highly dangerous for babies and little children. For this reason bottled or other milk should not be allowed to remain in a warm place, as on a sunny porch or in a hot kitchen, for a moment longer than is necessary.

Delivery of Milk in Hot Weather.

In hot weather the best plan is to have the milkman put the milk directly into the refrigerator, because at that time of year milk can not be kept properly without ice.

If a refrigerator is not available, provide a small box containing ice, and if ice is unobtainable, provide some tight container with insulated walls that keep the heat from getting rapidly to the cold milk. A home-made fireless cooker is admirable for this purpose, especially if partially filled with ice. In the absence of any of these devices, arrange with the milkman not to leave the milk in the sunlight, but to put it in the coolest, shadiest place around the house.

Handling Milk in the Home.

In handling milk around the home, do not pour it from one vessel to another until it is to be consumed. Do not let the bottle of milk remain out of the refrigerator a moment longer than is necessary. Keep the milk covered, using paper caps or an inverted tumbler on bottles, or storing it in covered utensils. Any household utensil that is to be used as a vessel for keeping milk should first be cleaned thoroughly and scalded.

Before opening a bottle of milk, wash and wipe the neck and outside of the cap with water and a clean cloth. The little depression on the top of the cap may collect dust or water and any milk that leaks out may attract flies. Lift out the cap with a pointed instrument, so that the outside of the cap, which may be contaminated, will not be pushed down into the milk. Each time the milk is to be poured from the bottle it is a wise precaution to wash the neck as described.

Milk in a Refrigerator.

The refrigerator where milk is stored should be cleaned regularly, especial care being given to keeping the drip pipe free and clean. The ice rack also should be cleaned and any place where food is kept or milk stored should be scalded occasionally with sal-soda solution. The refrigerator, even though cold, may quickly be contaminated by a few drops of spilled milk, or by small particles of food. No matter how clean the refrigerator, milk should never be kept in an open vessel. As milk absorbs odors easily, such food as fish, cabbage, or onions should not be kept in proximity to it.

Clean Empty Bottles.

As soon as a milk bottle is emptied, rinse it thoroughly with cold water. Do not return dirty bottles and do not use milk bottles except to hold milk. Returning dirty bottles to the milkman may mean that a few days later either you or your neighbors will get contaminated milk. Milk bottles should never be taken into a sick room. In case of infectious or contagious disease, all bottles should be boiled thoroughly and should not be returned to the dealer without the express permission of the attending physician. Such diseases easily can be made epidemic through disregard of this precaution.

Where There Are Children.

Care of milk, important for all, is a vital necessity in a home where there are children. It is absolutely essential to the safety of babies. No intelligent mother will leave to an ordinary servant the task of caring for or preparing the milk for her baby. Mothers of small children should get, from their own physicians, explicit directions for the proper handling of milk and for cleaning and sterilizing nursing bottles. Pamphlets on infant feeding may be obtained from the municipal milk stations or health officers. Milk for babies can not be kept too cold, and too much care can not be given to keeping it clean and covered.

Further information on this subject may be had by writing to the U. S. Department of Agriculture, Washington, D. C., for Farmers' Bulletin 413, "Care of Milk and Its Use in the Home."

WARNING.

We are advised that a very clever swindle is being worked by a young man calling on physicians in various sections of the country. He is fraudulently soliciting orders and collecting money for subscriptions to medical journals and for medical books published by various firms. He usually represents himself as a student, working his

way through college and trying to get a number of votes to help him win a certain contest. He sometimes uses the names of L. D. Grant, H. E. Peters, R. A. Douglas and F. C. Schneider and he usually gives a receipt bearing the heading of some society or association, such as United Students' Aid Society; the Alumni Educational League; the American Association for Education,

The description given of this swindler is —young man of the Jewish type, rather slender, with very dark hair combed straight back and shows his teeth plainly when talking.

The whole scheme is a fraud. The societies mentioned do not exist. The idea is to collect money by offering special discounts and prices on medical books and journals and skip with the money.

This young man does not represent W. B. Saunders Company, whose name he frequently uses. He is a fraudulent subscription agent and physicians, generally, should be on the lookout for him.

Reviews from Current Literature

DIAGNOSIS OF TUBERCULOSIS

Thompson, Sam E.: Common Sense and the Fever Thermometer vs. the Stethoscope and the Microscope in the Diagnosis of Early Pulmonary Tuberculosis. Southern Medical Journal, July, 1916, Vol. IX, p. 583.

In presenting this paper the author endeavors to prove the following:

1. That we are finding only a very small per cent of our incipient tuberculosis patients.

2. That this is due largely to faulty teaching.

3. That as a result of this faulty teaching we can not rely upon the stethoscope.

4. That the microscope will not make a sufficiently early diagnosis.

5. That in using common sense and the fever thermometer we can find a large number of early cases.

From the best information the author has been able to obtain, not more than 10 per cent of tuberculous patients sent to sanatoria are in the incipient stage; notwithstanding the fact that more than 60 per cent of them are classified as first stage cases by the doctors making out the applications.

As I see it, faulty teaching has given us the wrong idea of tuberculosis. Our clinical picture of the early stage of this disease is wrong. From textbook descriptions of tuberculosis, the man in the street can make the diagnosis. With these teachings before them physicians will not even suspect tuberculosis.

Before the appearance of germs in the expectoration there must be (as a rule) extensive ulceration, softening and breaking down of lung tissue. To save our patients and to check the spread of the disease, the diagnosis must be made and treatment begun before this condition is reached. Withholding the diagnosis for a positive sputum and waiting till our patient "looks like" he has tuberculosis is more fatal than Sydenham's injunction to "ride and rough it" as a cure. The common sense symptoms for which we must look, and upon which our opinion must be based, are:

1. Fatigue, an unreasonable fatigue, without sufficient exercise to produce it.

2. The feeling of being "run down," a persistent state of feeling bad.

3. An appetite without edge, a persistent indifference to food.

4. Loss of energy and mental tone.

5. Indigestion or slight loss of weight.

6. Slight morning cough or tendency to clear the throat.

7. Chest pains, usually between or below the scapulae, pains aching in character.

8. Reflex hoarseness.

9. Rapid pulse, 80 or above.

These are among the earliest symptoms and when they persist or persistently recur, no other diagnosis is justifiable until we can positively eliminate tuberculosis.

In closing the author says:

"Let me beg that we make our attitude towards tuberculosis one of eternal suspicion. The 'white plague' is everywhere. It is the most common, the most frequent of all diseases. The finding of our early cases is the general practitioner's burden, and if he will depend less upon the stethoscope and the microscope and rely more on common sense and the fever thermometer, he will find a much higher per cent of his early cases and thousands of lives will be saved annually. T. T.

PREGNANCY IN THE TUBERCULOUS

Norris, Charles C.: Pregnancy in the Tuberculous. American Journal of Obstetrics, 1916, p. 997.

The author's paper is based upon a study of 68 cases of pregnancy in tuberculous women and includes a thorough resume of the literature. He draws the following conclusions:

The combination of pregnancy and pulmonary tuberculosis is a frequent one.

Pulmonary tuberculosis exerts little or no influence against conception and, except in the advanced stages, exerts little or no influence towards causing abortion, miscarriage, or premature labor.

About 20 per cent of mild, quiescent pulmonary tuberculosis and 70 per cent of more advanced cases exhibit exacerbations during the pregnancy or the puerperium.

Marriage is worse for the tuberculous woman than for the tuberculous man owing to the dangers incident to pregnancy.

Unless the tuberculous lesions have been quiescent for a moderately prolonged period, tuberculous women should not marry.

Tuberculous women should not become pregnant unless the disease is in the first stage and has been quiescent for a minimum of two years.

It is as yet impossible to determine with certainty which case will bear the added strain of pregnancy well and which badly. We must individualize our patients. Moderately extensive lesions, recent activity, the development of secondary lesions, especially laryngeal involvement, loss of weight, fever, hemorrhage, sweats, lack of vigor, and the inability to obtain proper treatment are ill omens. The reverse is more favorable.

Prior to the fifth month of pregnancy the uterus should be emptied if the disease manifests any evidence of becoming active. Curettage during the first six or eight weeks, and in the later cases vaginal hysterotomy are the preferable methods. Interruption of the pregnancy does not secure an amelioration of the pulmonary condition but does greatly improve the prognosis. About 65 to 70 per cent of cases, prior to the fifth month of pregnancy, will be definitely improved by empting the uterus as soon as acute symptoms arise, provided that proper after treatment is carried out. Late intervention, that is after a week or more from the onset of the exacerbation, has given less satisfactory results. Sterilization is rarely justifiable.

After the fifth month it is generally advisable to treat these patients expectantly. Labor should be made as easy as possible. Induction of labor two weeks before term is often advisable. Rarely, if ever, should they be allowed to go beyond term. At labor forceps or version is usually indicated.

Infants should not nurse and should be otherwise guarded against infection.

Hygienic and dietary treatment should be employed at all times. Patients should be examined by a competent internist at frequent intervals.

In most cases tuberculosis precedes the pregnancy. Even when symptoms are first observed during pregnancy the infection probably occurred before conception.

G. R. H.

SUGARS AND STARCHES IN INFANT FEEDING

Southworth, Thomas S.: Sugars and Starches in Infant Feeding. Pediatrics, Vol. XXVIII, 1916, p. 47.

Sugars and starches not only furnish fuel for heat and energy but are stored in body as reserve fat and as a protection against heat radiation. Of the different forms of sugar lactose is slowest in absorption and

hence exercises a prolonged influence upon intestinal flora. This is an advantage in healthy conditions of the intestinal tract, but may be of disadvantage upon the occurrence of intestinal disturbance. Milk sugar is often gotten from unreliable sources and is capable of causing serious trouble with digestion. Milk sugar from a reliable source should be insisted upon.

Cane sugar and maltose-dextrin are less apt to be contaminated.

The limit of toleration for maltose-dextrin is about double that of the other forms of sugar and this is a point in favor of its employment when considerable quantities of sugar are indicated. Finklestein has gradually receded from his position that lactose under given conditions inevitably produces fever, and the role played by bacteria in causing fermentation of carbohydrates has recovered a dominant position.

In diarrheal conditions the acidity of the stools may be increased 500 per cent by giving increasing amounts of milk sugar. The effect of this is to markedly increase peristalsis. Absorption from the intestines can not occur if peristalsis is very active, therefore sugars must be decreased or eliminated under such conditions.

In using cereal diluents a preparation containing 0.75 per cent of starch is usually within safe limits for infants, and sufficient for its protective colloidal effect on casein coagulation. In addition to this action boiled starch has nutritive and remedial properties. The addition of a cereal diluent to milk during the last half of the first year often shows brilliant results in gains of weight. Difference of opinion exists as to what age such utilization of starches becomes sufficient to be taken into account. Starches are of special value in putrefactive conditions owing to their favoring influence on the growth of the lactic types of bacilli. Starch is also recognized as tending to delay peristalsis and is of use when intestinal disturbance has been caused by the employment of milk sugar or cane sugar. J. D. L.

THE LEUTIN REACTION IN CONGENITAL SYPHILIS

Gordon, Murray B.: The Value of the Luetin Reaction in Congenital Syphilis. Archives of Pediatrics, Vol. XXXIII, 1916, p. 186.

The technique as originally given by Noguchi is described in detail and three different forms of both negative and positive reactions are pictured. Case histories are given of 22 children suffering from congenital lues. Eighty-one per cent of these gave a positive reaction. In the author's experience the minimum age limit for the positive reaction is twelve months, though some observers have obtained positives even in the first month. The luetin test is better adapted for pediatric work than the Wassermann and especially does this apply to dispensary work and in instances where parents refuse to allow blood to be drawn from a child. Familiarity with the technique of the test is readiy acquired, the interpretation is comparatively without difficulty and it is readily available for every practitioner. The emulsion used in making the test is absolutely sterile, is safe and its use is unattended by constitutional disturbance.

J. D. L.

VALUE OF AUTOSERUM IN SKIN DISEASES

Gottheil, William S.: The Value of Autoserum Injections in Skin Diseases. The New York Medical Journal, Vol. CIII, 1916, p. 1209.

Gottheil calls our attention to the subject of autogenous serum injections in certain of the chronic and reoccurring skin affections, especially psoriasis. The article is of particular interest in view of the fact of a previous report of the writer some two years ago, also from the fact that there have occurred from time to time in the medical literature a varied view of the subject by a number of prominent dermatologists. In his article Gottheil mentions the reports of Fox, Williams, Willock, Ravich, Trimble, Kingsbury and others. To quote the writer in his article, "I hold no brief for the serum treatment, and I should not call renewed attention to it if the experience of the last two years had not convinced me of its use-

fulness. I recognize the cogency of some of the criticism. It takes time and trouble, if done *secundom artem;* and it should never be done save under these conditions. There is necessarily some expense connected with its employment. It is not, therefore, suitable for routine treatment of dispensary patients, where rapidity and inexpensiveness are required. But these are not considerations of moment in private practice. Will it do good? Will it enable us to accomplish results otherwise, in some cases at least, unattainable? Will it enable us to avoid or mitigate the disagreeable features necessarily incident to the treatment of an extensive and obstinate general dermatosis? Will it prevent or even postpone the reappearance of the malady? And finally is it a safe procedure? To all these questions I can unhesitatingly answer, "Yes."

In the article Gottheil briefly reviews some of the cases treated by him with autogenous serum injections, and the following conclusions are given by him:

"1. In psoriasis the autogenous serum treatment, while not itself curative of the disease, is an important factor in the treatment. It cuts down the time required for the troublesome local treatment from weeks to days, and enables us to promise to clear the skin from two to five days in even the worst and most obstinate cases. It postpones relapses for a long time, possibly indefinitely. In most cases it so influences the type of the disease that the relapsing lesions are few and insignificant, and are readily amenable to local treatment.

2. In chronic urticaria, neurodermatitis, pruritus senilis, and other obstinate itchy dermatoses, it is worthy of trial. In some cases its action is effective and brilliant.

3. It is of some value in bad pustular acne; but in furunculosis, folliculitis, and other pus infections I have not found it useful.

4. In chronic eczema the same may be said as of acne; the injections are sometimes apparently effective, and at others fail entirely.

5. In pemphigus, lepra, and obstinate lichen planus it is ineffective.

6. In syphilis it is useless." J. L. K.-S.

ROENTGEN DIAGNOSIS OF GALLSTONES

Case, J. T., M. D., F. A. C. S.: Some Statistics on the Negative and Positive Roentgen Diagnosis of Gallstones. Amer. Jour. of Roentgenology, Vol. III (new series), 1916, p. 251.

"Including the forty-one operated cases in which gallstones were found, and the fourteen cases in which the Roentgen report was 'suspicious of gallstones,' I have a series of fifty-five cases of gall-bladder disease, some without stones, in forty-eight of which the X-ray evidence pointed definitely to the gall bladder. We may, therefore, conclude that it is possible to definitely show gallstones in fifty per cent of positive cases, and to show Roentgen evidence of gall-bladder lesion in eighty-eight per cent of the cases of gall-bladder disease.

Of course from the X-ray examination it is not possible to make a positive declaration as to the absence of gallstones. Many patients are not operated. Percentages on this point would be extremely misleading. Hence I have refrained from expressing my negative findings in percentages except to show the absurdity of such statistics. The point that I wish to make is that gallstones are demonstrable with much greater frequency than has until recently been conceded. The frequency with which stones may be shown is so great that I believe the time has arrived when the X-ray examination should be required in every suspected case." L. W. C.

TREATMENT OF CARBUNCLES BY THE ROENTGEN RAY

Dunham, Kennon, M. D.: Treatment of Carbuncles by the Roentgen Ray. Amer. Jour. of Roentgenology, Vol. III, 1916, p. 259.

The author reports the successful treatment of sixty-seven consecutive carbuncles by means of the Roentgen ray.

The treatment as he administers it consists

of one full therapeutic dose with the Coolidge tube, target distance eight inches through three mm. of aluminum with a nine-inch spark gap.

Only one such exposure is required provided the entire induration has been exposed. The results: within less than 48 hours the entire clinical condition of the patient has changed. The first night after the treatment the patient is usually more restless and sometimes believes that the treatment has done him harm, but the second night he sleeps well. The infected area ceases to be painful and the infected part can be moved without distress. From now on the object of the treatment is to prevent reinfection.

Sometimes the induration is gradually absorbed with little or no discharge. At other times it breaks down and discharges through the numerous sinuses, but usually a large carbuncle will soften up and take on the appearance of an abscess. In such cases it is a very simple matter to lance it and permit free drainage.

Almost no scar results after this method of treatment. He has applied the treatment to palmer abcesses of the streptococcic type with excellent results.

He has hoped to try it on a felon, but no such opportunity has presented itself.

Apparently it is the streptococcic infections that receive the most benefit.

Nothing in all roentgentherapy gives such positive results as the treatment of a carbuncle. L. W. C.

TUBERCULOSIS

Bissell, Frank S.: Roentgen Symptomatology of Pulmonary Tuberculosis. Amer. Jour. of Roentgenology, Vol. III, 1916, p. 139.

Bissell brings out again the value of the X-ray in the early diagnosis of tuberculosis of the lung.

"Kennon Dunham has described an interwoven appearance of pulmonary striæ which he regards a sign characteristic of tuberculous infection. This contention has much anatomical and clinical support, the merits of which will be discussed in this paper.

"A study of clinical cases is somewhat inconclusive because the earliest tuberculous changes are entirely unproductive of symptoms or physical signs; because a positive tuberculin reaction is not accepted generally as conclusive evidence of active tuberculous infection and because many cases of tuberculous disease of the lung proceed to complete recovery either with or without treatment. To those who believe that a positive reaction is of some significance, and amongst these I desire to identify myself, there is some satisfaction in our observation that this reaction and the presence of the phenomenon of peripheral interweaving seem to go hand in hand. Thus, in 63 consecutive cases in which a positive constitutional reaction was obtained, the characteristic interweaving was noted in every case. In 12 cases, which were negative to tuberculin, the network was absent in 10, while in the other 2 it was atypical.

The author concludes:

"1. The tuberculous lesion, very early in its development, presents certain distinctive characteristics recognizable in the roentgenogram.

"2. The differentiation of symptom-producing from nonsymptom-producing lesions is a clinical as well as a roentgenological problem.

"3. The roentgenogram frequently presents the only objective signs of the disease and a roentgen study of every case is of the utmost importance from the standpoint of diagnosis and of prognosis.

"4. The coordination of positive roentgenographic data and the constitutional tuberculin reaction is significant." L. W. C.

Be Sure and Read Bulletin 6 on Advertising Page VI

Publisher's Notes

ADRENALIN IN HAY FEVER.

Many able therapeutists aver that the best method of treating hay fever is by prophylaxis. The contention is not without substantial foundation since it is in consonance with the modern trend of preventive medication. Unfortunately, the physician not uncommonly lacks opportunity for the application of prophylactic measures. In a majority of cases the disease has already manifested itself when his services are sought. The situation then calls for prompt, effective treatment. Application of the suprarenal substance in the form of Adrenalin Chloride Solution or Adrenalin Inhalant is undoubtedly a wise procedure at this juncture. One feels justified in saying this in view of the long, efficient service that has been rendered by these agents in the treatment of hay fever.

While not specifics in the strictest sense, the Adrenalin solutions control the hay-fever symptoms effectively and secure for the patient a marked degree of comfort. By reason of their astringent property, they constrict the capillaries, arrest the nasal discharge, minimize cough, headache and other reflex symptoms, and hasten the resumption of natural breathing.

For topical use in the treatment of hay fever Adrenalin Chloride Solution should first be diluted with four to five times its volume of physiologic salt solution; Adrenalin Inhalant should be diluted with three to four times its volume of olive oil. The solutions are applied in spray form to the nares and pharynx. Any good atomizer adapted to the use of oily or aqueous substances is suited to the purpose.

A VALUABLE NEW CATALOGUE.

Parke, Davis & Co. announce the publication of their 1916 price list, which is said to be an improvement in many respects over any previous issue of this valuable catalogue. The book is divided into three parts: Part 1—Fluid Extracts, Pills, Elixirs, Syrups, Tablets, etc.; Part 2—Specialties, into which have been merged Special Preparations; Part 3—Biological Products. The nomenclature of the U. S. P., Ninth Revision, has been adopted in the new list, the term "milliliter" ("mil") being substituted for the cumbersome "cubic centimeter." The standards of the new U. S. P. applying to fluid, solid and powdered extracts and tinctures, together with the doses, have also been adopted. All Harrison-act items (products that must be ordered on official order forms) are clearly distinguished. Its amplitude, its handy classification, its comprehensive general index, all serve to make the new catalogue a reference book of the utmost value to medical practitioners. We understand that the book will be ready for distribution about August 1st. Physicians are advised to write for a copy, addressing their requests to Parke, Davis & Co., Detroit, Mich.

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